



WORLDWATER®
C O R P O R A T I O N

US DOE Road Show, Hauppauge, NY
Photovoltaics, Pumps & Power Security
THE RIGHT IDEA AT THE RIGHT TIME

WORLDWATER...THE RIGHT IDEA

- ***Experienced, international full-service solar energy and water management company***

- California division established in early 2003
- Wholly owned subsidiaries in the Philippines and East Africa
- Founded in 1984; technology originally developed by Princeton engineers
- Proprietary solar power systems now operating in over 20 countries worldwide
- Headquartered in Pennington, NJ



WORLDWATER...THE RIGHT IDEA

- ***Technologically in a Class by Itself***
- **Only company** with the capability to power **up to 600 hp** directly from solar or from grid/solar combination
- **Only company** with technology able to sense interruption of power from the grid and **automatically switch system over to solar power**
- WorldWater holds two U.S. patents (with two more patents pending).



U.S.: Mainstreaming Solar Power



- High utility rate charges, which are routinely increasing
- Concern over continuity of supply – East Coast/Midwest Blackout 2003
- Incentives offered for solar PV systems – utility rebates plus federal and state incentives
- Net metering option – “spin the meter backwards”

Grid – tied PV is now a cost effective option



First Large Scale PV Direct Powering of Water Pumping Anywhere

- First 50HP PV direct powered pump system installed in California by WorldWater at the end of 2002
- When the grid is available both solar and grid power are blended to maximize volume of water pumped
- When the grid fails, the PV system isolates from the grid and directly powers the load at whatever speed is sustainable by the level of solar input

Locke Farm – 50HP



Locke Farm



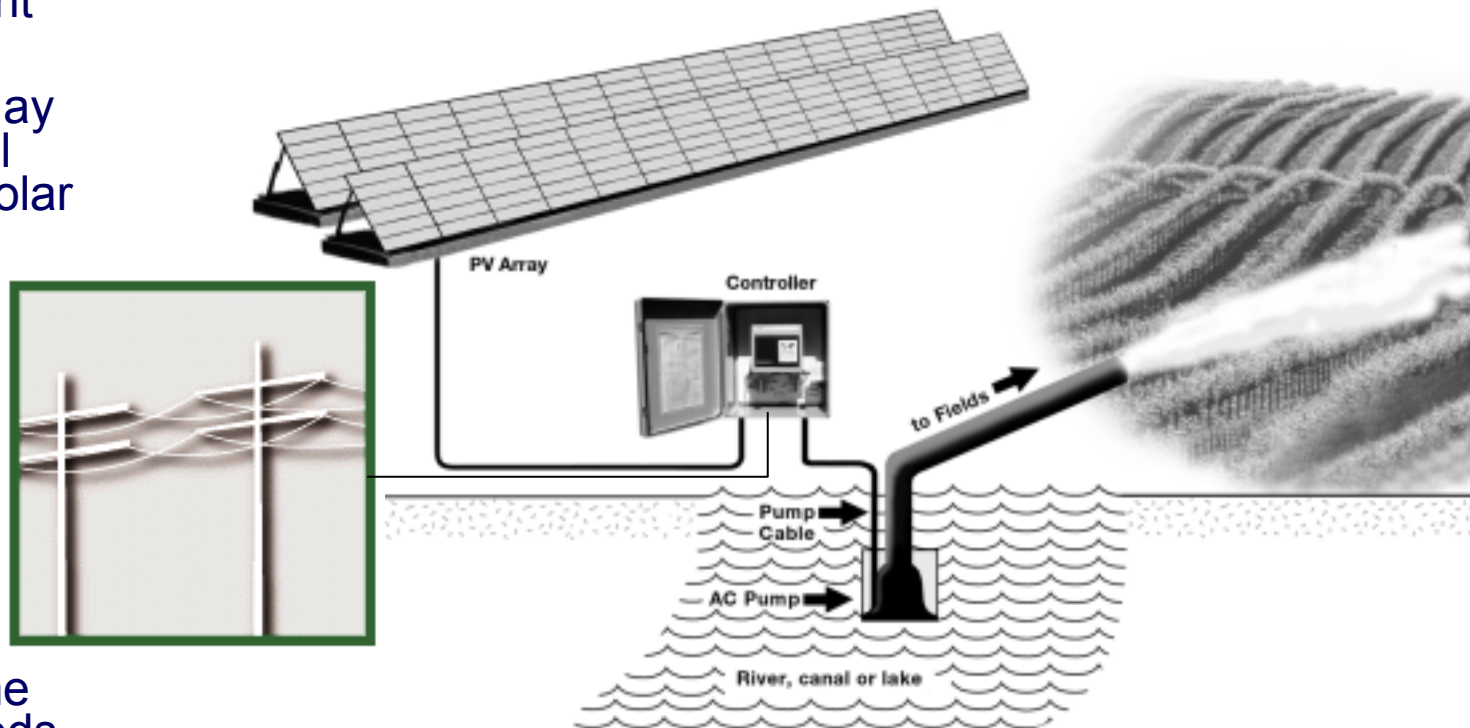
Solar Facts

- ☀ The Earth receives more energy from the Sun in just one hour than the World uses in a whole year.
- ☀ World energy consumption will increase nearly 60% between 2000 and 2020, mostly in the developing world. Renewables – mainly Solar – expected to supply 20% of all annual energy generated by 2020.
- ☀ World solar (PV) demand increased from 254 MW in 2000 to 360 MW in 2001. Up from 21 MW in 1985.
- ☀ *WorldWater Solar pumping systems guarantee users fixed electricity costs for 8 years at today's prices – and eliminate all electrical usage costs for the following 12 to 20 years!!*

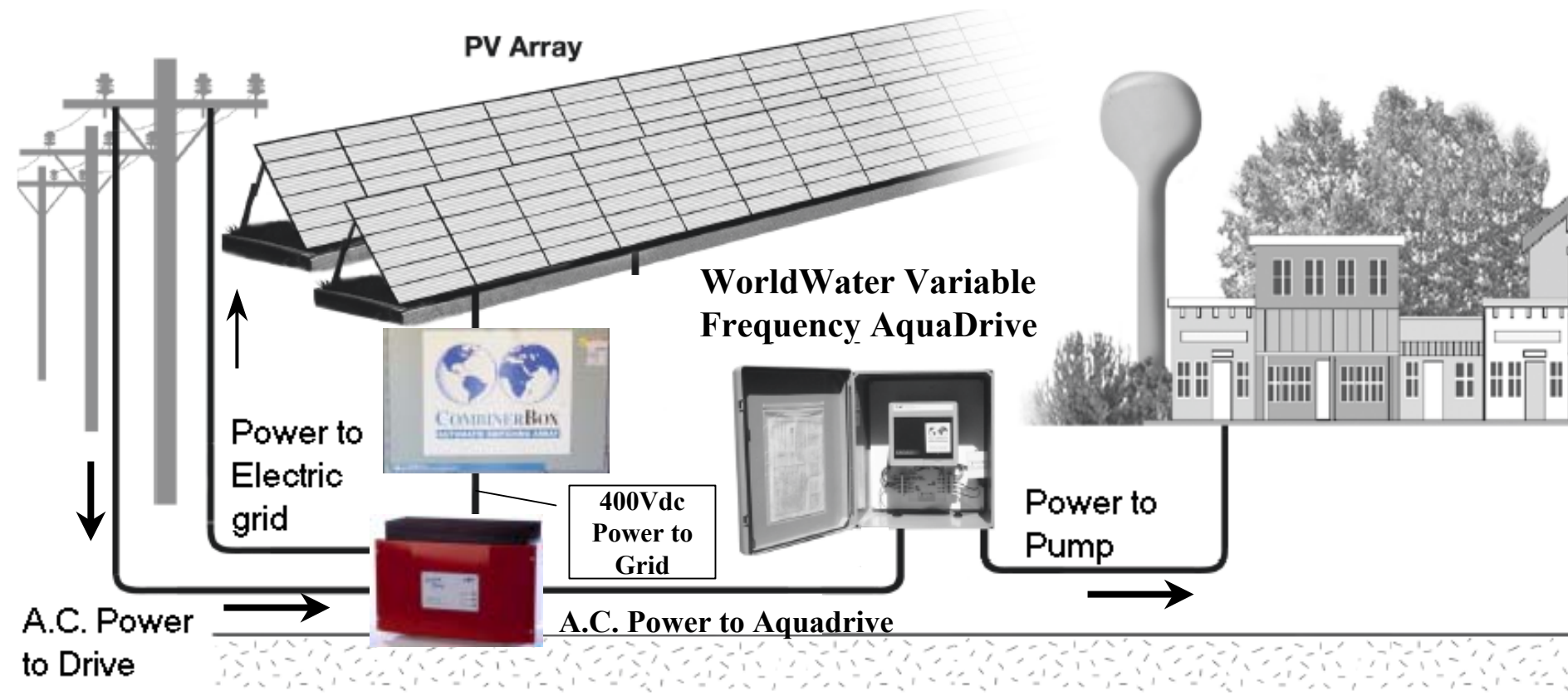
AquaMax High Yield Solar Irrigation Pumps



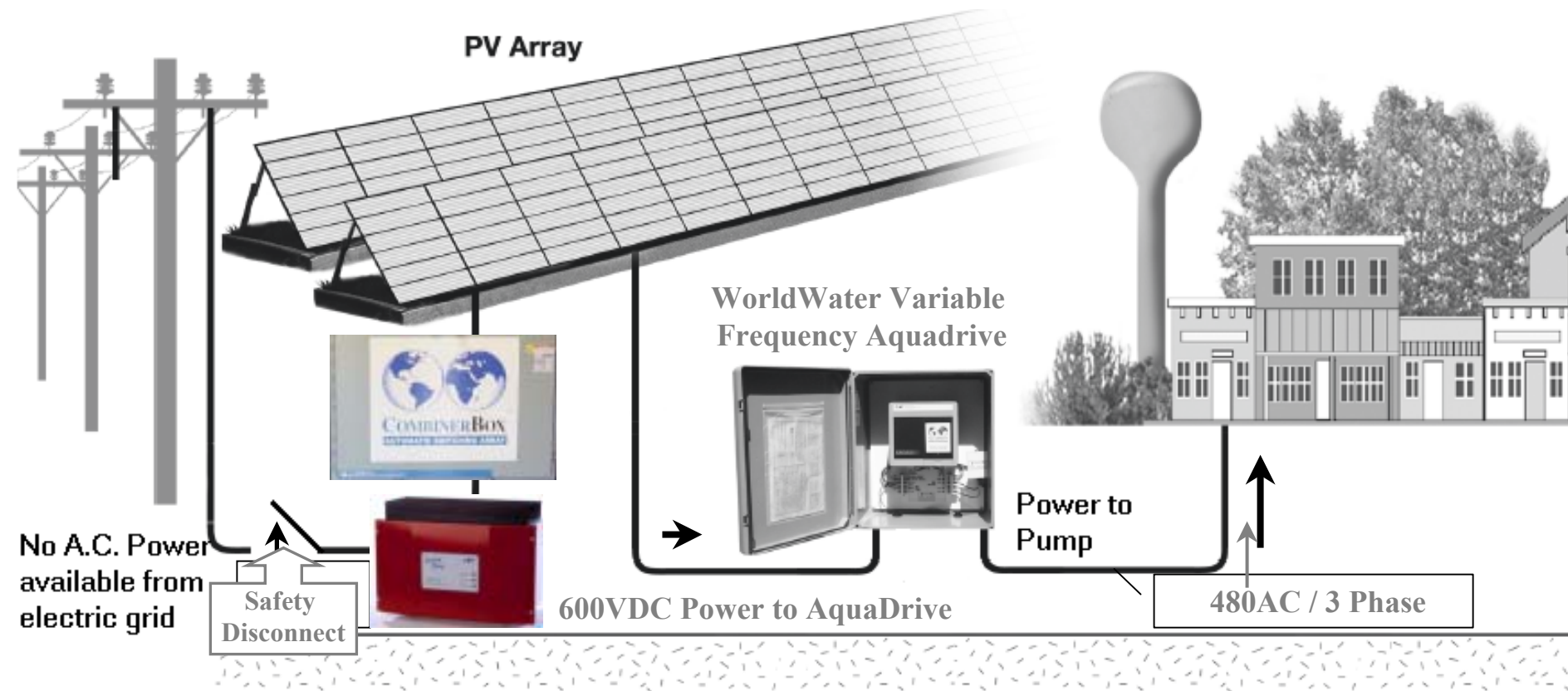
- Solar Power will run the pump during day light hours.
- On a cloudy day grid power will supplement solar power
- Operation is completely automatic.
- Guaranteed not to buy power during peak rate period
- During daytime blackout periods, solar power will supply water.



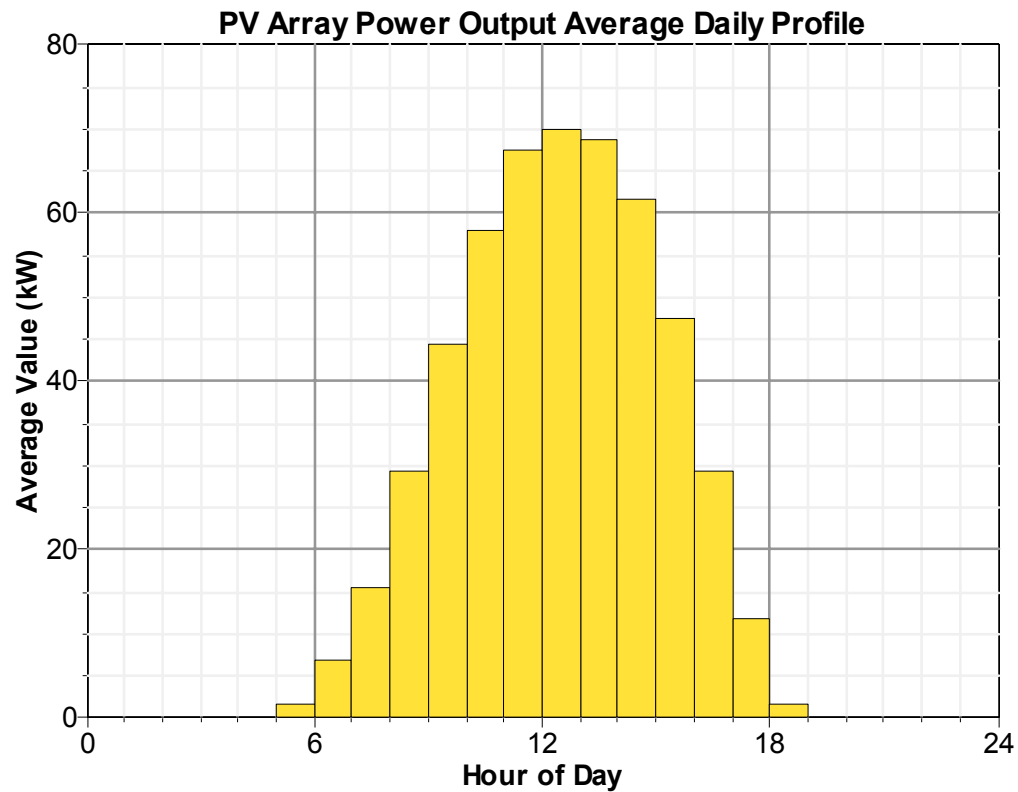
Net Metering Mode



Daytime Blackout Conditions

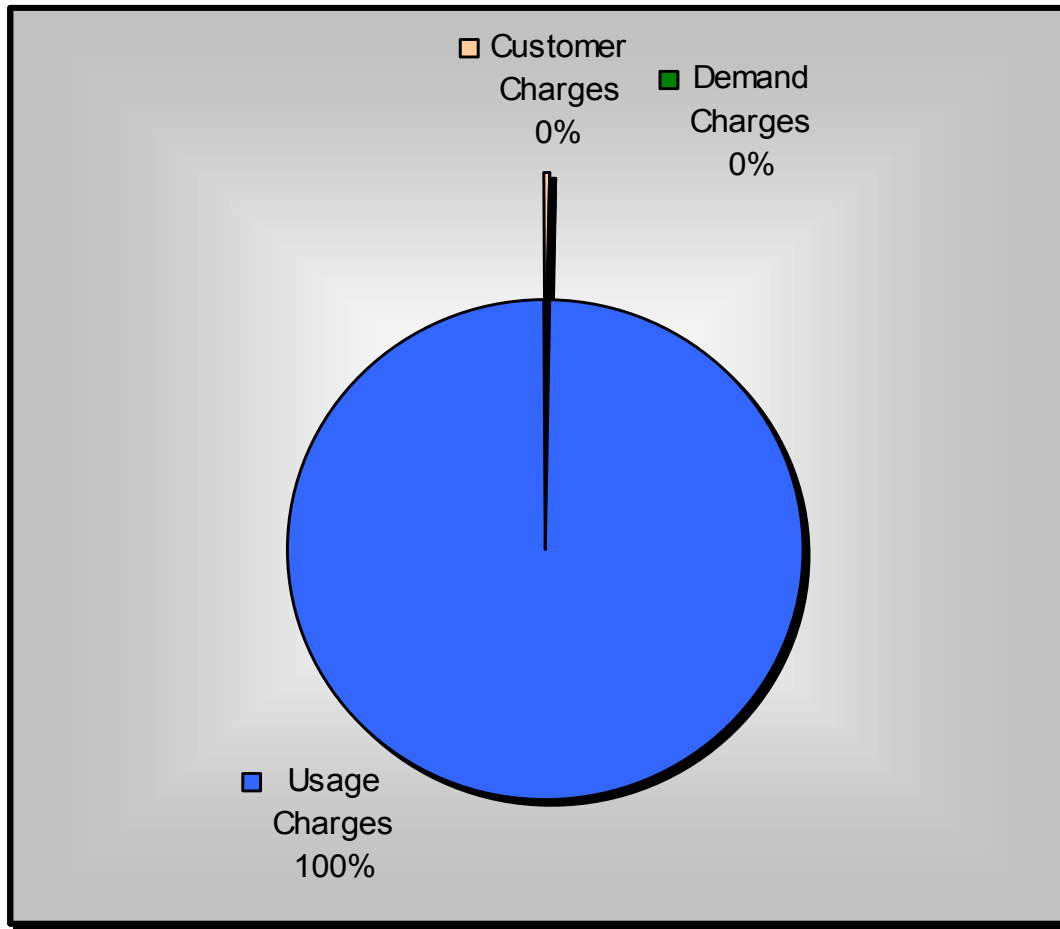


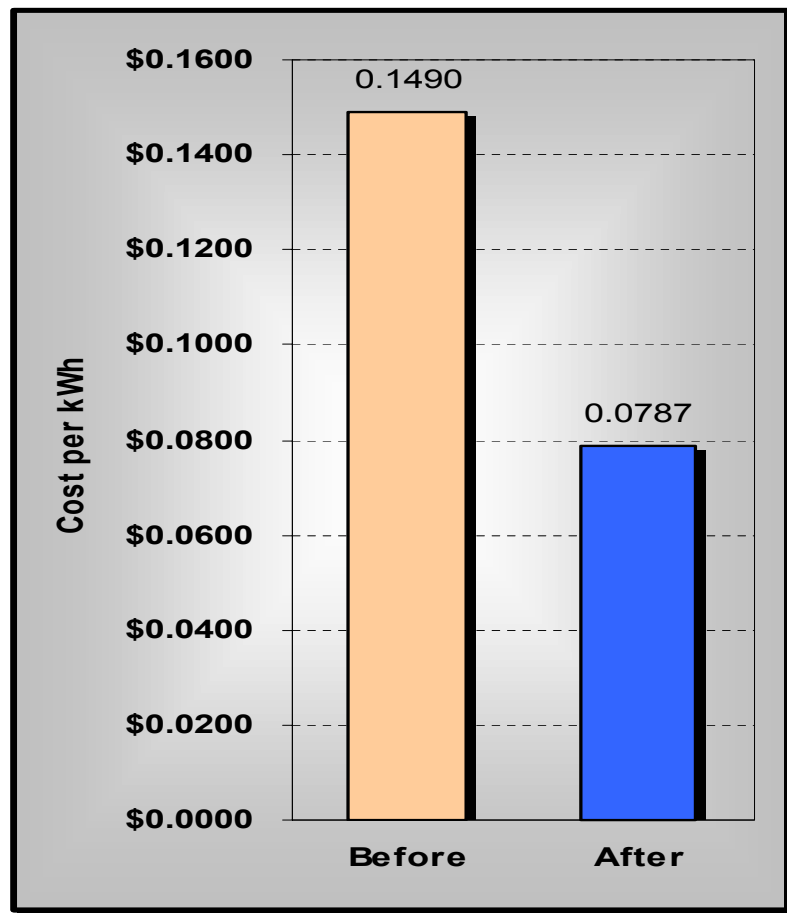
Feature	WorldWater Corp	Other Solar Companies
Save On Electric Bill	Yes	Yes
Pump Water during Blackout Period	Yes	No
Protect Motor during Brown Out Period	Yes	No
Improve Pump Operating Efficiency with Variable Speed Operation	Yes	No
Soft Start Motor for Increased Life	Yes	No
Reduce Peak Demand Surcharge	Yes	No
Comprehensive Water Management Capability	Yes	No
Operate Pumps up to 600 HP Directly from Solar Power	Yes	No



Fresno, Ca.; Prepared by the National Renewable Energy Laboratory

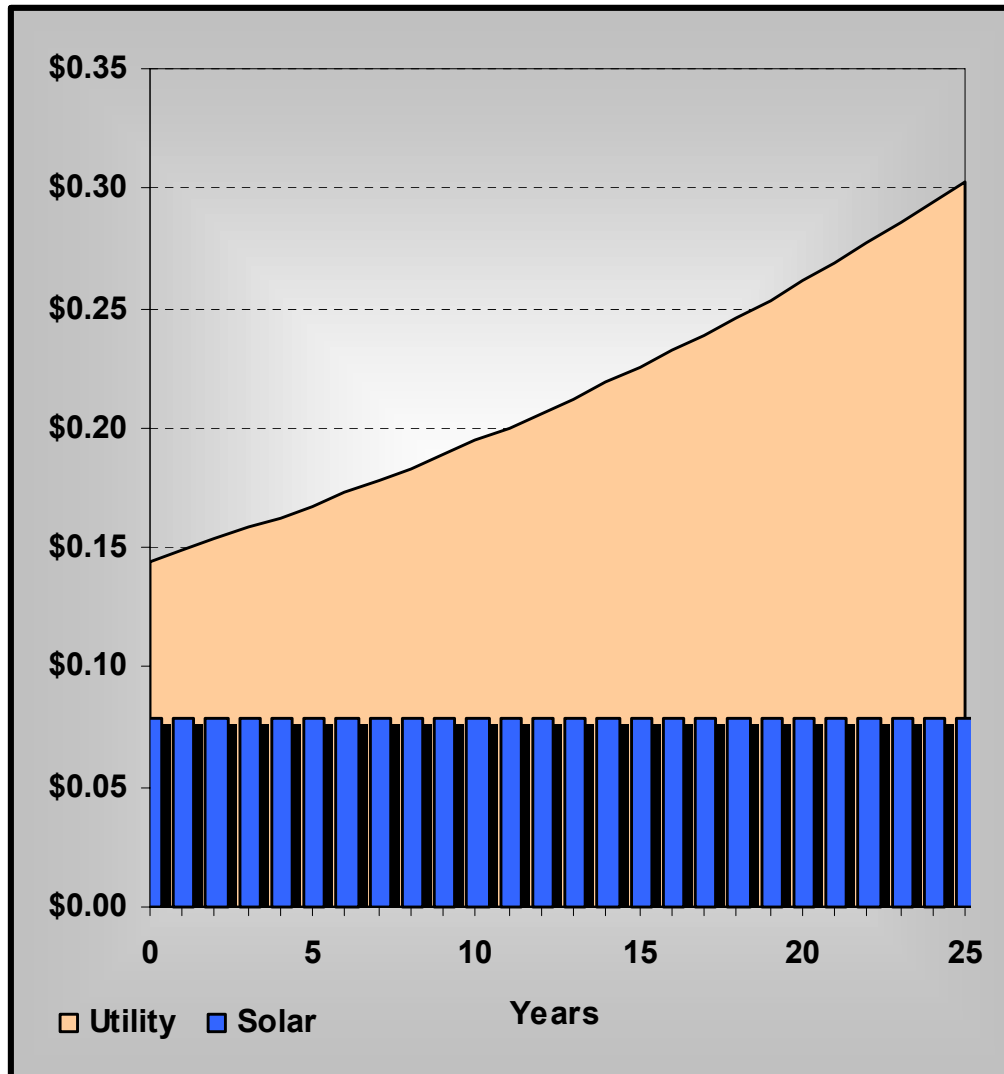
Current Electricity Charges





Future Cost of Electricity

Solar vs Grid Power



PV INCENTIVES IN NEW YORK STATE



- Rebate Program:** For grid-connected projects larger than 15kW Up to 70% of the net installed cost, to maximum of \$500,000 per site. Funds administered by NYSERDA
- Green Tag Purchase Program:** Private company offers customers 3, 5 and 10 year contracts; price of renewable energy credits (RECs) varies by length of contract. Typically PV payments are 2 to 5 cents per kWh, or \$300 to \$3000 per year for commercial customers.
- Accelerated Tax Depreciation & Federal Tax Credit**

Power for Cooling Water for Agriculture Processing



- In addition to pumping water power is also required to cool it for agricultural processing
- Renewable Energy provides a cost effective sustainable power source to chill water or for cold stores for agricultural processing
- The first large scale application of Solar Power for powering chillers was installed in California in early 2003

Lehr Brothers



Lehr Brothers - 350HP



Power for Water Utilities



- Power for pumping water is their major expenditure
- Already pumping at night to avoid high daytime electric tariffs
- Sustainable Power provides cost effective pumping as well as automatic back-up power in the event of Grid outage

Joshua Basin



The New York Times - September 1, 2003

Anand Rangarajan, left, and Thomas McNulty have patented a device that allows the integration of solar and electrical power.

Patents | Teresa Ricciardulli

Switching to the power of the sun to help limit blackouts and save money too

This same system, says World Water's founder and chief executive, Quentin Kelly, can be adapted to be used by companies as different as shopping centers and utilities.

AMANI RANGARAJAN claims are not modest. His company's technology, he says, not only has the potential to limit power blackouts but also promises to reduce pollution and save billions in energy costs.

cial is to rely on solar loads on grids during peak power," said Steve Miller, an author of "Consumer Guide to Solar Energy: New Ways to Lower Utility Costs, Cut Taxes and Take Control of Your Energy Needs" (Thomas Books, 2011) and a consultant who has occasionally given advice to WorldWater. "As it gets more mature, I would think that utilities

Dr. Rangarajan, and his colleague, Thomas McNulty, have invented a system for switching to backup solar power within seconds of a power failure. In June Dr. Rangarajan, who is executive vice president of the World Water Corporation, a solar-energy technology company in Pomona, N.J., and Mr. McNulty, its director of engineering, received just one of 4,983 bids for the job.

But not anytime soon. "Unions don't step out in front of anything," Mr. Ullar said. "They are never the change agents of technology."

"We can sense the power has gone down and reconfigure the pump and the solar panels in an instant," Dr. Rangarajee told. "It doesn't require any operator

Likely early adapters are water and sewage plants like New York City's pumping stations, which dumped 40 trillion gallons of raw sewage into waterways in the recent blackout.

The technology was first developed not with urban New Yorkers in mind but, rather, California farmers. With a state economy beset by an energy crisis in recent years, farmers in California have suffered blackouts at the worst times: on hot, dry days when crops must need to be irrigated by electrically powered systems.

"We could have actually prevented this from happening with our solar technology," Dr. Rangarajan said. Water and waste streams have additional incentive

Dr. Sauerbrey and Mr. Matthey have essentially patented a two-stage system that switches and electrical circuits, permitting a simple integration between solar and electrical power. When the power grid is supplying electricity internally, the bus routes external power to the utility. If the power grid goes down, the bus shuts off its connection with the utility, reconfigures voltages and sends electricity back to the production system.

in two solar backup systems. Unlike an investment in diesel-powered generators, he said, the solar technology ultimately pays for itself. That is because the solar power generated can be used to run the plant or sold back to the utility in a system known as "net metering."

This permits current to keep flowing, but not along the power grid, which for safety considerations must not have any current.

"Up to 80 percent of a typical water utility's expenses go for paying electric bills," Dr. Mangarajan said. "What we're saying is put in that solar system and at the same time you not only have a green backup system but also

Patients may be viewed on the Web at www.usps.gov or may be ordered through the mail, by patient number, for \$2 from the Patient and Trademark Office, Washington, D.C. 20331.

The system is also ideal for developing countries, he says. A WorldWater system is being used at Central Luzon State University in the Philippines.

Dr. Wanguejian has been working on solar power since he was at Lincoln Laboratories at MIT in the 1970's. Was he been frustrated at the slow rate of acceptance of solar technologies?

"That is putting it mildly," Dr. Bangorput said. "All my life I've been striving to bring solar into the mainstream. The solar business is still seen in kind of a marginal way in most places. But I think the future is finally dawning."

www.worldwater.com

WORLDWATER Corp. / Packaging Business Park 55 Route 37 South / Parsippany NJ 07054 / USA / Tel: 908 919 0700 / Fax: 908 919 0720 / e-mail: jerry@wv-nw.com / RASDA symbol: WWAT DE
WORLDWATER CA / Tel: 866 710 0893 / Fax: 949 701 1192



Solar Water Pumps
Solar Electrical Systems
Water Management

*The Right Idea...
At the Right Time*

NEWS RELEASE

For immediate release

WORLDWATER TESTIFIES BEFORE NEW YORK CITY COUNCIL ON BLACKOUT 2003

Executives Explain How Solar Technology Could Have Prevented Sewage Spill

Pennington, NJ, Sept. 17 -- WorldWater Corporation testified yesterday before the New York City Council Committee on Environmental Protection and Committee on State and Federal Legislation's oversight hearing on Blackout 2003.

Appearing at the Council's invitation, WorldWater Chairman and CEO Quentin T. Kelly and Executive Vice President Anand Rangarajan testified as to the impact WorldWater's proprietary solar technology might have made had it been in place as an alternative power provider during the August 14th power outage in New York City.



WorldWater Technology Delivers *Consistent* Power For :

- **WATER STATIONS**
- **WASTEWATER TREATMENT PLANTS**
- **MUNICIPAL ELECTRIC POWER STATIONS**
- **WELL WATER SYSTEMS**
- **IRRIGATION**

Model for Sustainability



US – East Coast – Distributed Generation

- Can provide cost effective, large scale and sustainable energy solutions *immediately* in the East Coast or anywhere in the US directly powering major loads - reducing dependence on transmitted power while providing *built in* back-up for critical loads in the event of grid outages.

Around the Globe



- ☀ **WorldWater Corp. Pennington, NJ**
- ☀ **United States – California, New Jersey, New York & other states**
- ☀ **Asia**
- ☀ **Africa**
- ☀ **Middle East**

WorldWater Corporation



Corporate Headquarters

Pennington Business Park

55 Route 31 South

Pennington, NJ 08534

Tel: 609-818-0700 Fax: 609-818-0720

www.worldwater.com

Email: pump@worldwater.com



WORLDWATER[®]
C O R P O R A T I O N

THE RIGHT IDEA AT THE RIGHT TIME